

perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

References

- GR-337 Program Audio Special Access and Local Channel Services, Issue 1, December 1995 (replaces TR-NPL-000337, Issue 1)
- TR-TSY-000431 15 kHz Digital Audio Terminal for Program or Television Requirements and Objectives, Issue 1, October 1987
- GR-342 High-Capacity Digital Access Service - Transmission Parameter Limits and Interface Combinations, Issue 1, December 1995 (replaces TR-INS-000342, Issue 1)
- TR-NPL-000339 Wideband Analog Special Access Service - Transmission Parameter Limits and Interface Combinations, Issue 1, October 1987

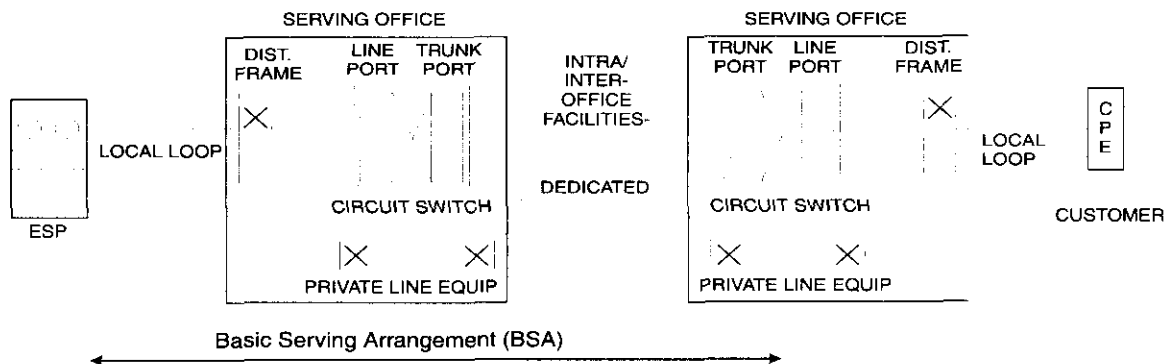
3.5 Category 3, Type E - Dedicated Video BSA (1019)

Service Description

The dedicated video BSA provides an ESP with a dedicated, broadband communications channel to the ESP's client. Applications may include (but are not limited to): full-time and part-time commercial broadcast quality television, noncommercial broadcast quality television, video teleconferencing, distance-learning applications, surveillance, closed-circuit television. The channel is capable of transmitting a standard 525 line/60 field monochrome or National Television Systems Committee (NTSC) color video signal and associated audio signals. The associated audio signal(s) may be either duplexed or provided as separate channels. Video services are provided between customer designated premises through Serving Wire Center(s) or between a customer designated premises and a telephone company hub.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type E - Dedicated Video BSA	AM - Dedicated Video BA - Dedicated Video Service BA - Video Service BS - Dedicated Video NX - Video Services PB - Video Service SWB - Special Access - Video Qwest - Analog PLS - VS

Dedicated – Private Line – BSA



Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found. Examples of potential alternatives may be: 5 or 15 Hz audio channels, duplexed or separate channel audio signals, and video/audio delay difference.

Signaling

Video services are available full-time and therefore signaling arrangements are not applicable.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes define the bandwidth and the provision of the audio signal(s) associated with a broadcast video channel. NCI codes are: (1) Total Conductors, (2) Protocol, (3) Impedance, (4) Protocol Options, and (5) Transmission Level Point (ignored for Television Special Access).

References

- GR-338: Television Special Access and Local Channel Services - Transmission Parameter Limits and Interface Combinations, Issue 1, December 1995 (replaces TR-TSV-000338, Issue 2)
- TR-TSY-000431 15 kHz Digital Audio Terminal for Program or Television Requirements and Objectives, Issue 1, October 1987
- Qwest Publication 77326 Qwest Fiber Optic Commercial Video Services, Issue D, December 1994

3.6 Category 3, Type F - Dedicated Digital (< 64 kbps) BSA (1020)

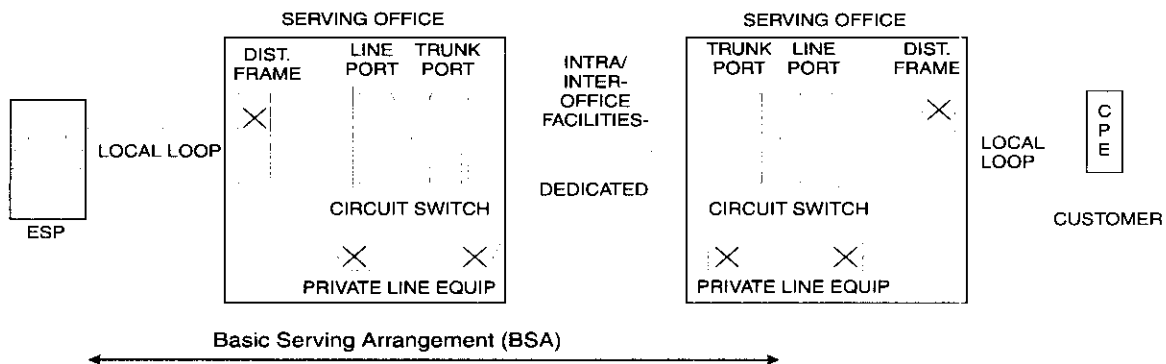
Service Description

The dedicated digital (< 64 kbps) BSA provides an ESP with a 4-wire digital channel to the ESP's client. This serving arrangement provides for digital transmission of synchronous serial data at primary rates of 2.4, 4.8, 9.6, 19.2, or 56 kbps, plus associated secondary channel rates of 2.4, 4.8, 9.6, 19.2, or 56 kbps. Error Detection/Correction is an inherent part of this BSA.

Digital Data special access services are nonswitched channels that provide the capability to transmit digital data between two end user points of termination or and end user point of termination and a service provider point of termination.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type F - Dedicated Digital (< 64 kbps) BSA	AM - Ameritech Base Rate Services BA - Digital Data Service BS - SynchroNet [®] /DDS NX - Dedicated - Digital Data NX - Digital Data Service NX - DIGIPATH Digital Service II PB - Digital Data Service, Private Line Services SWB - Special Access - MegaLink SM Data Qwest - Digital Data Service

Dedicated – Private Line – BSA



Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette

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for the reference information where LEC defined alternatives may be found. Examples of potential alternatives may be: Transfer Arrangement.

Signaling Arrangements

These services are available full-time and therefore supervisory signaling arrangements are not applicable. The signaling service is synchronous with timing provided through the LEC's facilities to the end user on the received bit stream. Individual calls are not set up and taken down.

Transmission Capabilities

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

References

- TR-NWT-000341 Digital Data Special Access Service Transmission Parameter Limits and Interface Combinations, Issue 2, February 1993
- Qwest document 77312 Qwest Digital Data Service, Technical Description, Issue D, October 1994

3.7 Category 3, Type G - Dedicated High Capacity Digital (1.544 Mbps) BSA (1021)

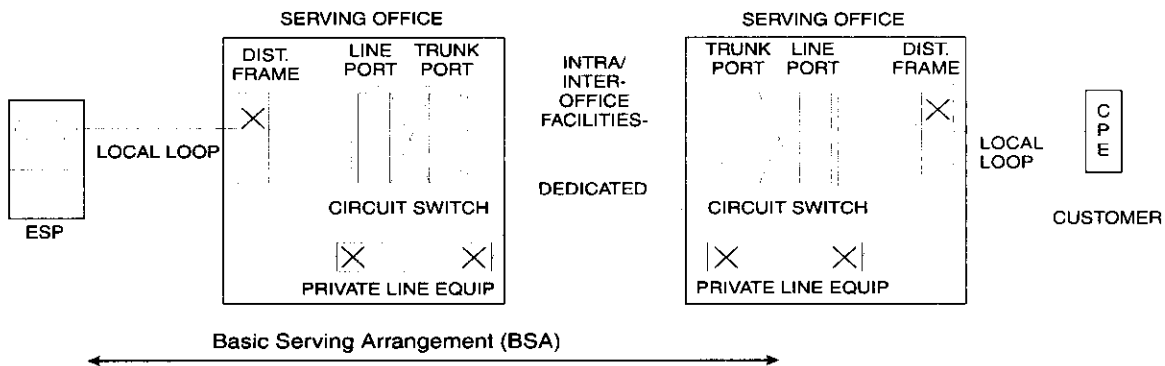
Service Description

The dedicated high capacity digital (1.544 Mbps) BSA provides an ESP with a dedicated channel. High Capacity Digital service is defined as a service that provides two-point, private-line, full duplex transmission at 1.544 Mbps isochronous serial data with a payload of 1.536 Mbps between an end user and an end user or between an end user and a LEC central office.

In some cases, this BSA can be provisioned for dedicated transport of Extended Superframe Format (ESF) datachannel capability.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type G - Dedicated High Capacity Digital (1.544 Mbps) BSA	AM - Ameritech DS1 Services BA - High Capacity Digital Service BS - MegaLink [®] /HiCap NX - Superpath 1.544 Mbps NX - Superpath Optical 1.5 Mbps Service PB - High Capacity Services (1.544 Mbps) SWB - Special Access - High Capacity (1.544 Mbps) Qwest - DS1 Service

Dedicated – Private Line – BSA



Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette

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for the reference information where LEC defined alternatives may be found. An example of a potential alternative may be: *transfer arrangement*.

Signaling

The signaling service is isochronous with timing provided through the LEC's facilities to the end user on the received bit stream. Individual calls are not set up and taken down.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

References

- GR-342 High-Capacity Digital Special Access Service - Transmission Parameter Limits and Interface Combinations, Issue 1, December 1995 (replaces TR-INS-000342, Issue 1)
- GR-54 DS1 High Capacity Digital Service End User Metallic Interface Specifications, Issue 1, December 1995 (replaces TR-NPL-000054, Issue 1)
- GR-312 Functional Criteria for the DS1 Interface Connector, Issue 1, October 2003 (replaces TR-TSY-000312, Issue 1 – no technical changes)
- Ameritech document AM-TR-OAT-000033, DS1 Customer Installation: Metallic Interface, Issue B, January 1990
- Pacific Telesis technical reference PUB L-780021-PB/NB Requirements and Objectives for Network Interface Unit and Mounting, Issue 2, November 1994
- Qwest engineering publication 77327 Digicom® III High Capacity Digital Access Service "Joint Designed" Network Channel Interface, December 1988

® Digicom is a registered trademark of Qwest Corporation.

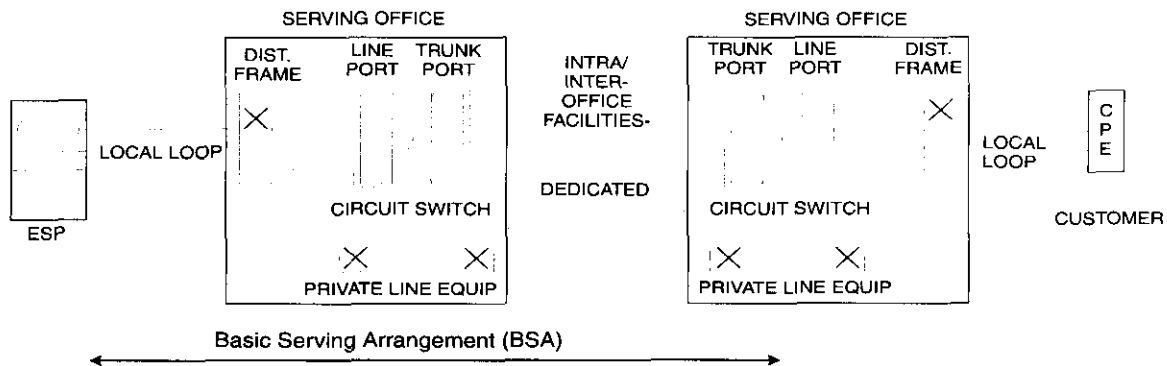
3.8 Category 3, Type H - Dedicated High Capacity Digital (>1.544 Mbps) BSA (1022)

Service Description

The dedicated high capacity digital (>1.544 Mbps) BSA provides an ESP with a dedicated channel to the ESP's client via a digital facility. High Capacity Digital service is defined as a service that provides two-point, private-line, transmission at speeds above 1.544 Mbps between an end user and an end user or between an end user and a LEC central office. Individual calls are not set up and taken down. The ESP must specify the desired transmission speed as an alternative with this BSA.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type H - Dedicated High Capacity Digital (>1.544 Mbps) BSA	AM - Ameritech DS3 Services BA - High Capacity/Lightwave Service BS - LightGate [®] /HiCap NX - Dedicated - Digital - 45 Mbps NX - Superpath 45 Mbps Service PB - High Capacity Services (>1.544 Mbps) SWB - Special Access - High Capacity MegaLink SM Custom Qwest - DS3 Service

Dedicated – Private Line – BSA



Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found. Examples of potential alternatives may be: transmission speed and transfer arrangement.

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Signaling

The signaling service is isochronous with timing provided through the LEC's facilities to the end user on the received bit stream. Individual calls are not set up and taken down.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

References

- GR-342 High-Capacity Digital Special Access Service - Transmission Parameter Limits and Interface Combinations, Issue 1, December 1995 (replaces TR-INS-000342, Issue 1)
- Qwest engineering publication 77327 Digicom® III High Capacity Digital Access Service "Joint Designed" Network Channel Interface, December 1988
- Qwest publication 77324 Qwest DS3 Service, Issue C, April 1993.

® Digicom is a registered trademark of Qwest Corporation.

3.9 Category 3, Type I - Dedicated Alert Transport BSA (1023)

Service Description

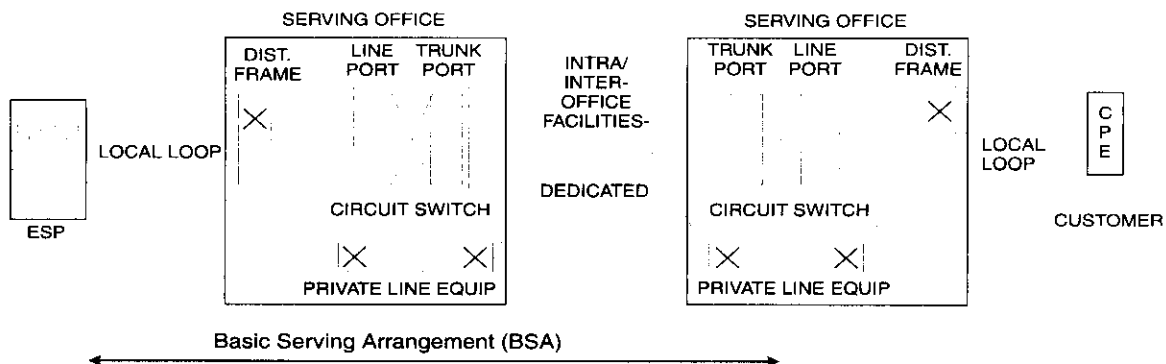
The dedicated alert transport BSA using derived local channel technology and a LEC provided scanner offers ESPs a 24 hour supervised monitoring capability using compatible local loop access lines.

The scanner continuously monitors the status of all clients. A host processor monitors all scanners and, in response to a change in status, will identify the subscriber from which the alert condition originates and notify the appropriate ESP.

This serving arrangement utilizes derived channels which comply with Underwriter's Laboratories (UL) AA and National Fire Protection A and National Fire Protection Association (NFPA) requirements.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type I - Dedicated Alert Transport BSA	BA - REACT SM BA - Alarm Transport Service BS - WATCHALERT [®] NX - PULSENET SM NX - Alert Transport Service PB - POLLSTAR SM DLC Security Transport

Dedicated – Private Line – BSA



Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found.

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[®] WATCHALERT is a registered service mark of BellSouth Corporation.

SM PULSENET is a service mark of NYNEX.

SM POLLSTAR is a service mark of Pacific Bell.

Signaling

Dedicated serving arrangements are available full-time and therefore supervisory signaling arrangements are not applicable.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. The NCI codes for the desired service must be specified by the customer when ordering metallic services. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

Reference

- BellSouth Publication TR-73530 Description of the Network Interface at an Alarm Agency to WATCHALERT® Service, Issue A, June 1989

3.10 Category 3, Type J - Dedicated Derived Channel BSA (1024)

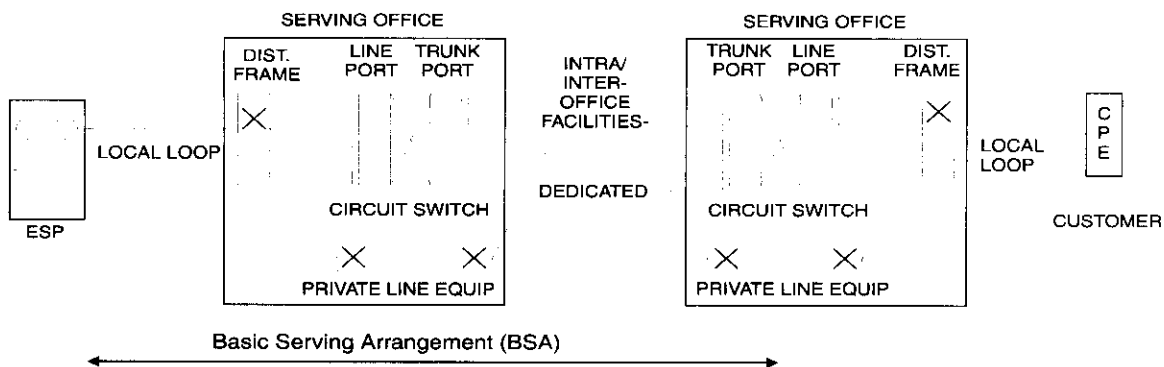
Service Description

The dedicated derived channel BSA provides one or more low-speed dedicated data channels (e.g. 9.6 kbps) derived on a dial tone line in addition to the voice channel. The customer is provided with a multiplexed interface requiring the use of a data-voice multiplexer (DVM) on the customer's premises. A matching DVM in the central office splits off the data channel(s) from the voice path before the voice path enters the circuit switch.

Several options may be available for extending the derived data channel to the ESP, including a low-speed private line, a multiplexing arrangement whereby several derived channels are transmitted on a higher speed private line, or a data voice multiplexer similar to the equipment employed on the end user's access link resulting in "back-to-back" derived channels.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type J - Dedicated Derived Channel BSA	BA - Dedicated Derived Channel BS - Derived Data Channel Service NX - DOVPATH® SWB - DovLink SM Qwest - Simultaneous Voice and Data Service

Dedicated – Private Line – BSA



Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found.

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SM DovLink is a service mark of Southwestern Bell Telephone Company.

Signaling

Dedicated serving arrangements are available full-time and therefore signaling arrangements are not applicable.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. The NCI codes for the desired service must be specified by the customer when ordering metallic services. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

Reference

- SR-NPL-000665 Network Interface Specification: DOV/DVM Type 1, Issue 1, January 1987.
[No longer listed.]

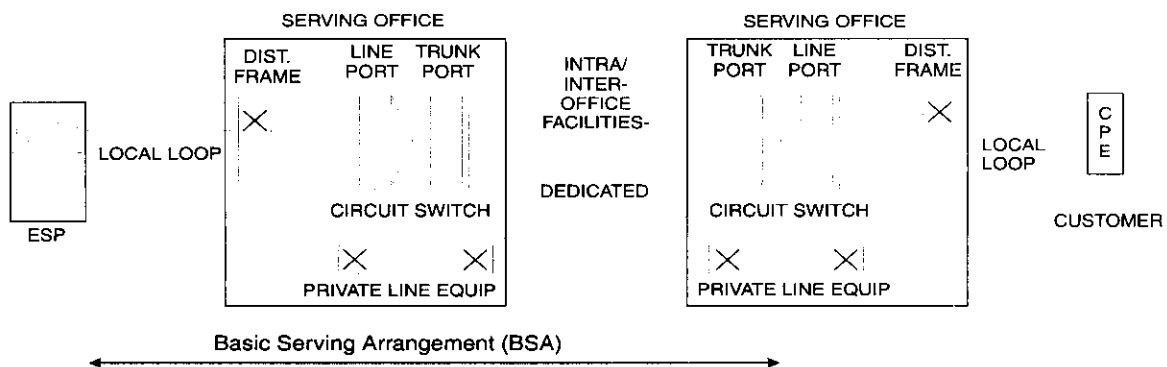
3.11 Category 3, Type K - Dedicated Digital (64 Kbps) BSA (1037)

Service Description

Dedicated Digital (64 Kbps) Service will provide a channel for duplex four-wire transmission of synchronous serial data at 64 Kbps. The channel provides a synchronous service with timing provided by the telephone company. The 64 Kbps channel will be provided between two customer designated premises or between a customer designated premise and a telephone company serving wire center.

Generic Name of BSA	Regional Company BSA Name
Category 3, Type K - Dedicated Digital (64 Kbps) BSA	AM - Ameritech Base Rate Service BA - Digital Data Service 64 KBS BS - DS-0 Transport Facilities NX - Clear Channel Capability (see NYNEX note) [*] Qwest - Digital Data Service - 64 Kbps

Dedicated – Private Line – BSA



Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette

^{*} Note: NYNEX offers 64 Kbps service associated with the Dedicated High Capacity Digital (1.544 Mbps) BSA.

for the reference information where LEC defined alternatives may be found. Examples of potential alternatives may be:
Transfer Arrangement.

Signaling Arrangements

These services are available full-time and therefore supervisory signaling arrangements are not applicable. The signaling service is synchronous with timing provided through the LEC's facilities to the end user on the received bit stream. Individual calls are not set up and taken down.

Transmission Capabilities

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options. The NCI codes for the service desired must be specified by the customer when ordering. Only certain code combinations are compatible, as listed in TR-NWT-000341.

References

- TR-NWT-000341 Digital Data Special Access Service -- Transmission Parameter Limits and Interface Combinations, Issue 2, February 1993
- Ameritech Technical Reference TR-OAT-00070 Issued October 1990, Ameritech OPTINET 64 Interface Specifications, Issue 1, September 1990
- BellSouth Technical Reference TR 73545 SynchroNet[®] Service Network Interface Specifications, Issue D September, 1994

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4. Category 4 - Dedicated Network Access Link BSA (1025)

Service Description

The dedicated network access link (DNAL) BSA provides a dedicated data channel between the ESP's termination and a designated central office which contains the specific features required by the ESP. The DNAL is used to transmit network information or network control information from the ESP to the network (e.g., activate a message waiting indicator), or to deliver network information or network control information from the network to the ESP (e.g. calling number identification over a message desk interface). The type of DNAL BSA used will determine the bandwidth alternatives and capabilities available to the ESP.

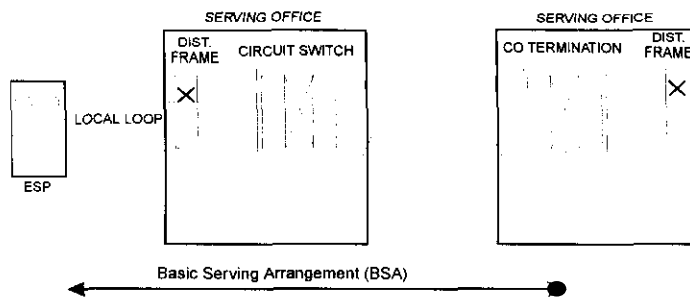
The DNAL BSA can support one-way or two-way transmission depending on the alternatives used.

Route diversity may be available with this serving arrangement.

Generic Name of BSA	Regional Company BSA Name
Category 4 - Dedicated Network Access Link BSA	AM - Dedicated Network Access Link AM - Type A-Signal Transfer Point Access (STP) (2011) AM - Type B-Circuit Switch Facility Control (CSFC) (2012) AM - Type C-Simplified Message Desk Interface (SMDI) (2013) AM - Type D-Simplified Message Desk Interface-Expanded (SMDI-E) (2014) AM - Type E-Ameritech Reconfiguration Service (2015) AM - Type F-Alarm Service (2016) AM - Type G-Ameritech Switch to Computer Applications (ASCAI) (2017) BA - Dedicated Network Access Link BS - Private Line/Special Access NX - (see NYNEX note)* PB - Dedicated Network Access Link SWB - Special Access - Metallic SWB - Special Access - Voice Grade SWB - Switched Access Dedicated Network Access Link Qwest - Analog PLS

* Note: NYNEX offers dedicated channels for specific network information or network control information as part of the appropriate BSA or BSE that provides the specific capability.

Category 4 – Dedicated Network Access Link – BSA



Alternatives

An alternative is an item that must be selected for the BSA to be technically meaningful. Alternative items may be available from some or all of the Local Exchange Carriers (LECs). Refer to the individual LEC tariff reference diskette for the reference information where LEC defined alternatives may be found.

Signaling

Signaling capability provides for the process by which one customer premises alerts another customer premises on the same service with which it wishes to communicate. These signals are the means by which the end user initiates a request for service, holds a connection or releases a connection.

Transmission

The subject of transmission covers a broad range of performance considerations related to the physical facilities that compose network architecture. Transmission parameters are designed to provide objective transmission performance characteristics, as perceived by the end user and LEC, between the points of termination. Transmission parameters are defined for each Network Interface (see below) supporting this BSA. These parameters are defined in the reference documentation.

Network Interfaces

The electrical and physical interface with the LEC is described by a Network Channel Interface (NCI) code for each end user termination and each service provider termination. NCI codes are provided to aid the user in understanding the relationship of the network interface to the electrical or optical characteristics of the interface. NCI codes have four basic components: (1) number of conductors (wire or fibers), (2) protocol code, (3) nominal reference impedance code, and (4) any applicable protocol options.

References

- TR-NWT-000335 Voice Grade Special Access Service - Transmission Parameter Limits and Interface Combinations, Issue 3, May 1993
- TR-NPL-000336 Metallic and Telegraph Grade Special Access Services - Transmission Parameter Limits and Interface Combinations, Issue 1, October 1987

BSE and CNS Descriptions

The following section contains descriptions of BSEs and CNSs. They are arranged alphabetically by generic name in the appropriate BSA categories. The BSA categories are:

1. Circuit Switched
2. Packet Switched
3. Dedicated
4. Dedicated Network Access Link

1. Technical Descriptions for Circuit Switched Serving Arrangements

Alternate Routing (1041)

When all the circuits in an ESP's circuit switched trunk serving arrangement with alternate routing capability are busy due to traffic volume the network will attempt to complete subsequent calls to an alternate route served by that switch as previously specified by the ESP.

Generic Name of ONA Service	Product Name	BSE or CNS
Alternate Routing	AM - Alternate Routing	BSA *
	BA - Alternate Traffic Routing	BSE
	BS - Alternate Routing	BSE or CNS
	NX - Alternate Routing	BSE
	PB - Alternate Traffic Routing	BSA *
	SWB - Alternate Traffic Routing	BSE
	Qwest - Alternate Traffic Routing	BSE

FEATURE OPERATION:

Alternate routing allows different routes to overflow in different ways, even though they share the same physical trunk or circuit set. Alternate routing should always be specifiable without reference to calling line or called trunk, circuit, or line set.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	1A ESS™	5ESS®	DMS-100®
Earliest Generic Release	1AE8A	5E2(2)	BCS17

2. The routing and charging function consists of interpreting the dialed digits, directing the connection to a trunk or circuit, directing the transmission of call setup data to the distant end, and determining what charge treatment to use. This process uses information associated with the calling line, dialed digit information, and route availability data.

* For Ameritech and Pacific Bell, this is a Circuit Switched BSA Trunk Type feature

ESS is a trademark and 5ESS is a registered trademark of AT&T.

DMS is a registered trademark of Northern Telecom.

Existing stored program controlled systems translate the dialed digit combination into classes of dialed digit combinations. These classes, along with the calling line associated indicator, are translated into a charge index and a primary route index. The primary route index defines the call setup data to be transmitted, a set of trunks, circuits, and an alternate route index to be used *if the initial set of trunks or circuits are unavailable*.

3. The 1A ESS machine provides for the ability to have 16 Route Indexes on Route Transfer Keys (16 keys). Through the operation of these keys it is possible to transfer outgoing traffic from one trunk group to another trunk group. It is also possible to split a particular trunk group in order to control the traffic offered to a specific quantity of trunks instead of offering all traffic to all of the trunks. The actual transfer key may be either located in the 1A ESS office or located on the ESP's premises.
4. In the 5ESS, one primary route and up to four alternate routes may be specified. These routes are assigned at the establishment of initial service. The alternate routes are fixed and cannot be enabled via a key operation.
5. The DMS-100 has several methods to provide alternate routing. The software methods used are similar to the 5ESS, in that the alternate routes are fixed and do not have the potential to be controlled manually as in the 1A ESS. The type of alternate routing method to use depends on the type of trunks used for this feature. Standard trunking can have up to eight alternate routes.
6. In some regional companies, this service may be limited to trunk side access utilizing Feature Groups B and D protocol, Feature Group D protocol only, trunk side BSA - 950 option, trunk side BSA - 10XXX (and/or 101XXXX) option, or trunk side BSA 950 option and 10XXX (and/or 101XXXX) option.
7. References:
 - LSSGR FR-64 (formerly FR-NWT-000064), GR-505 Call Processing (A Module of LSSGR, FR-64), Issue 2, December 2006, (replaces Issue 1).

This service, if offered as a BSE, is associated with the Circuit Switched Trunk basic serving arrangement.

Answer Supervision With A Line Side Interface (1042)

Answer Supervision is an electrical signal passed back to the calling end of a switched telephone connection indicating that the called line has gone off hook. This signal can be used by terminal equipment (PBX, pay telephone, call diverter, etc.) connected to the calling line to determine that the call has entered the talking state and that charging may commence. Previously this signal was available on trunks, not on lines.

The Answer Supervision signal consists of a reversal of the telephone line bias voltage, the ring normally being more negative than the tip. At the time of answer or shortly thereafter, tip and ring are interchanged by the switching machine, so that the tip is now more negative than the ring. This reversal persists at least until the called line goes on hook, and possibly until the calling line goes on hook. All of the other electrical characteristics of a line equipped for answer supervision are identical to those of a normal line.

Generic Name of ONA Service	Product Name	BSE or CNS
Answer Supervision With A Line Side Interface	AM - Answer Supervision With Line Side Interface	BSE
	BA - Answer Supervision with a Line Side Interface	BSE
	BA - Answer Supervision	BSE
	BS - Answer Supervision	BSE
	PB - Answer Supervision (Line Side)	BSE
	Qwest - Answer Supervision (Line Side)	BSE

FEATURE OPERATION:

Answer Supervision is a service most useful to a "device" like a PBX or "smart" pay telephone. (This does not preclude its use on a line directly connected to a telephone set, although the battery reversal may make the set's DTMF pad inoperative during the talking state of the call.)

1. The "device" (PBX, pay telephone, etc.) goes off-hook and dials a call in the normal way.
2. After dialing is completed, the call is switched through the network over the usual array of network components, which may include tandem trunks, tandem switches, Interexchange Carriers, and finally, a terminating local switch.
3. When the called party answers, the terminating office changes the supervisory state of the incoming trunk to off-hook from on-hook.
4. This state change is passed back toward the originating local office by each intervening office and trunk.
5. The originating local office uses this state change to note the time of answer for billing purposes. It also causes the line circuit of the line (equipped for Answer Supervision) to reverse the polarity of the battery feed toward the "device" that placed the call.
6. When the called party hangs up, the state change, off-hook to on-hook, is transmitted back to the originating local office. Depending on its software realization of the feature, the originating local switch may or may not pass this signal to the "device" by changing the battery polarity back to normal. In either case the originating local switch begins "calling party hold" timing on the originating line.

TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	5ESS	DMS-100
Earliest Generic Release	5E8	BCS24

This feature may be available on the 1A ESS switch with custom hardware and software.

2. Answer Supervision requires a special line card in the DMS-100.
3. Battery reversal may lag actual answer by upwards of 2 seconds. This is a function of accumulation of network elements processor time (delay) in the path of the call connection.
4. Answer Supervision is not provided when calling certain types of non-billing lines.
5. Answer Supervision is not provided to connections to OSPS, TSPS or TOPS systems due to the billing for these types of calls being handled at the operator system and not at the local office. Answer Supervision is a function resulting for a local recording of the billing record.
6. Answer Supervision may be provided before actual answer when calling certain types of ACD systems.
7. Battery reversal signals are not passed by the carrier systems that are normally used for pair gain and for foreign exchange service. Answer Supervision is compatible with foreign exchange service provided over physical cable facilities.
8. Many dial long line circuits, digital loop carrier systems or non-metallic line side facilities do not pass battery supervision.
9. This service is intended to be used by compatible terminal equipment. Many DTMF telephones are polarity sensitive and do not dial when the line voltage is reversed.
10. References:
 - GR-506 LSSGR: Signaling for Analog Interfaces (A module of LSSGR, FR-64) Issue 2, December 2006, (replaces Issue 1)
 - SR-2275, Telcordia Notes on the Networks, Issue 4, October 2000 (replaces SR-TSV-002275, Issue 3)
 - GR-334 Switched Access Service: Transmission Parameter Limits and Interface Combinations, Issue 1, July 1994
 - TR-NWT-000335, Voice Grade Special Access Service - Transmission Parameter Limits & Interface Combinations, Issue 3, May 1993
 - Ameritech Answer Supervision With Line Side Interface Specifications, AM-TR-MKT-000071, Issue 1, December 1990

This service is associated with the Circuit Switched Line basic serving arrangement.

Automatic Callback (1043)

Automatic Callback (CLASSSM) feature is an *outgoing* call management feature that allows the customer to automatically place a call to the last number called. It does not matter whether the last number called was busy or idle, answered or unanswered. If the called line is busy, the called line will be checked periodically and the customer will be notified by a special ring when the called line becomes idle. The customer can use the phone for incoming and outgoing calls while waiting for the special ringback. This capability requires that both the originating and terminating central offices be equipped with Common Channel Signaling (CCS) SS7 and be interconnected by SS7.

Generic Name of ONA Service	Product Name	BSE or CNS
Automatic Callback	AM - Repeat Dialing	CNS
	BA - Busy Redial	CNS
	BA - Repeat Dialing	CNS
	BS - Repeat Dialing	CNS
	NX - Busy Redial	CNS
	PB - Repeat Dialing	CNS or BSE
	SWB - Call Cue [®]	CNS
	Qwest - Continuous Redial	CNS

FEATURE OPERATION

The customer must contact the telephone company to initiate Automatic Callback service. A service order is required. Once the appropriate translations have been made to the customer's line, the customer may activate the service by using the service access code *66 (1166 for rotary dial), and may deactivate the service, to cancel any outstanding Automatic Callback requests, by using *86 (1186 for rotary dial).

Upon activation of Automatic Callback the called line is checked for busy/idle status and class of service. If the called line is idle and the class of service is permissible, call setup is attempted. If the called line is busy, the customer receives an announcement stating the called line is busy and the line will be checked periodically for busy/idle status. When the line becomes free the customer will hear a special ring. Upon answering the special ring, one of the following happens:

1. Call setup is attempted, the customer hears audible ringing while the called party receives power ringing. Or
2. The customer receives an announcement indicating the following:
 - 1A ESS & 5ESS: The called line has become busy again, hang up and try your call again. (This terminates Automatic Callback for this activation.) The customer can reactivate Automatic Callback by again using the service access code.
 - DMS-100: The called line has become busy again, monitoring of the line will resume, hang up and wait for the special ringback.

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TECHNOLOGICAL AND FEATURE INTERACTION CONSIDERATIONS:

1. This feature is available in the following central office switches:

Switch Type	1A ESS	5ESS	DMS-100
Earliest Generic Release	1AE10*	5E5	BCS28

Note: * Available on intraoffice basis with generic 1AE9.

2. The serving central office switch must be equipped with the appropriate CLASSSM Automatic Callback software and hardware. In order for this service to work on an interoffice basis, both the originating and terminating switches must be equipped with the CLASS and Common Channel Signaling (CCS) SS7 software and hardware and the interoffice trunks must be converted to SS7. This service is only offered on an intraLATA basis at this time.
3. This service is a "line" service and therefore cannot be assigned to subscribers with trunk terminations (i.e., PBX with DID). This service is also unavailable to customers that have denied originating treatment and multiline hunt groups that cannot have ringback directed to the calling station. In addition, because of the special ringing, this service may not work where channel banks (FX service), MFTs or bridge lifters are used (depending on circuit design).
4. The special ringing that the customer hears when call setup is being attempted consists of 2 short rings and 1 long ring in 6 seconds. Some telephone companies use this pattern for more than one service.
5. There are some digital loop carrier plug-ins that will not transmit the required special ringing.
6. The customer can have multiple Automatic Callback activations in effect concurrently.
7. Automatic Callback cannot be activated towards a line that has Call Forwarding Variable or Selective Call Forwarding activated. If the service cannot be activated, the caller is routed to a denial announcement or tone.
8. In some electronic key sets, power ringing generates a preset ringing pattern regardless of the ringing pattern generated by the originating central office. Therefore customers with these electronic sets may not be able to differentiate regular ringing for incoming calls from the special ringing for Automatic Callback.
9. The length of time the called line is monitored for busy/idle status is a telephone company settable parameter ranging from 16-45 minutes. The interval is set on a per switch basis and is generally the same throughout a regional company.
10. The customer can use the telephone for incoming and outgoing calls while waiting for the special ringback. However, the special ringback will not be attempted while the customer is using the telephone.
11. References:
 - GR-215 CLASSSM Feature: Automatic Callback, FSD 01-02-1250 (A Module of LSSGR, FR-64), Issue 2, April 2002 (replaces TR-NWT-000215 Issue 3 & GR-215 Issue 1).

This service, if offered as a BSE, is associated with the Circuit Switched Line basic serving arrangement.

Automatic Recall (1044)

Automatic Recall (CLASSSM) is an incoming call management feature that allows the customer to automatically call back the last incoming number without having to know the number that called. If the called line is busy, the called line will be checked periodically and the customer will be notified by a special ring when the called line becomes idle. This capability requires that both the originating and terminating central offices be equipped with Common Channel Signaling (CCS) SS7 and be interconnected by SS7.

Generic Name of ONA Service	Product Name	BSE or CNS
Automatic Recall	AM - Automatic Callback	CNS
	BA - *69	CNS
	BS - Call Return	CNS
	NX - *69	CNS
	PB - Call Return	CNS
	SWB - Call Return SM	CNS
	Qwest - Last Call Return	CNS

FEATURE OPERATION:

The customer must contact the telephone company to initiate Automatic Recall service. A service order is required. Once the appropriate translations have been made to the customer's line, the customer activates the service by dialing the service access code *69 (1169 for rotary dial), then depending on how the Local Exchange Company chooses to implement Automatic Recall, one of the following happens:

- **One-Level Activation Procedure**

Upon activation using *69 (1169 for rotary dial), the called line is checked for busy/idle status and class of service. If the called line is idle and the class of service is permissible, call setup is attempted. If the called line is busy, the customer receives an announcement stating the called line is busy. The line will be checked periodically for busy/idle status and when the line becomes idle the customer will hear a special ring. Upon answering the special ring, one of the following happens:

1. Call setup is attempted, the customer hears audible ringing while the called party receives power ringing. Or
2. The customer receives an announcement indicating the following:

1A ESS & 5ESS: The called line has become busy again, hang up and try your call again. (This terminates Automatic Recall for this activation.) The customer can reactivate Automatic Recall by again using the service access code.

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